a sensor configured to detect a position of the elongated member and output a position signal based on the position;

a controller coupled to the sensor, the controller configured to output a force signal based on the position signal; and

an actuator configured to apply a force to the elongated member, the force being applied to the elongated member as a haptic feedback based on the force signal.

2. (Amended) The apparatus of claim 1, wherein the degree of freedom is a translational degree of freedom.

3. (Amended) The apparatus of claim 1, wherein the degree of freedom is a rotational degree of freedom.

4. (Amended) The apparatus of claim 1, wherein the haptic feedback includes at least one of a detent force, a vibration, a barrier force, a damping force, and a spring force.

5. (Amended) The apparatus of claim 1, wherein the haptic feedback is output when the distal portion of the elongated member has been translated to an end of a working channel that guides the elongated member.

6. (Amended) The apparatus of claim 1, wherein said haptic feedback is output each time the elongated member moves a predetermined distance.

7. (Amended) The apparatus of claim 1, wherein the elongated member includes at least one of a guidewire, a catheter, a heart pacing lead, and a stylet.

8. (Amended) The apparatus of claim 1, wherein the distal portion of the elongated member includes at least one of a blade, a serrated edge, a biopsy tool, a trocar tip, an ultrasonic tool, a needle, a vibrating tip, a suturing tool, a retractor, an

electrosurgical cutter, an electrosurgical coagulator, a forceps, a needle holder, scissors, an irrigator, an aspirator, a medicator, a laser tool, a cryogenic tool, a flexible steering or guiding tip, and a camera.

9. (Amended) An apparatus, comprising:

an elongated member having a distal portion configured to engage tissue in a body and a manipulable proximal portion, said proximal portion configured to be moved in a degree of freedom;

a sensor configured to detect a first force applied to the elongated member in the degree of freedom and to output a sensor signal based on the first force;

a controller in communication with the sensor and the actuator, the controller configured to output a force signal based on the sensor signal; and

an actuator configured to apply a second force to the elongated member in the degree of freedom based on the force signal.

10. (Amended) The apparatus of claim 9, wherein the degree of freedom is translational.

11. (Amended) The apparatus of claim 9, wherein the degree of freedom is rotational.

12. (Amended) The apparatus of claim 9, wherein the controller is programmable.

13. (Amended) The apparatus of claim 9, wherein a magnitude of the second force is from about 10 percent to about 90 percent of the first force detected by the sensor.

14. (Amended) The apparatus of claim 13, wherein the second force is applied in a direction opposite an insertion direction of the elongated member.

15. (Amended) The apparatus of claim 9, further comprising an outer member having an orifice into which the elongated member is insertable, the actuator being disposed within the orifice.

16. (Amended) The apparatus of claim 15, wherein the outer member is an endoscope and the orifice is a working channel of the endoscope.

17. (Amended) The apparatus of claim 15, wherein the outer member is an introducer sheath and the elongated member is an endovascular instrument.

18. (Amended) The apparatus of claim 17, wherein the endovascular instrument includes at least one of a guidewire, a catheter, a heart pacing lead, and a stylet.

19. (Amended) The apparatus of claim 9, wherein the actuator is configured to apply the second force to be additive to the first force applied to the elongated member.

20. (Amended) The apparatus of claim 9, wherein the actuator is configured to apply the second force to counteract the first force applied to the elongated member by the user.

21. (Amended) The apparatus of claim 9, the sensor being a first sensor, the apparatus further comprising a second sensor coupled to the actuator, the second sensor configured to detect the second force.

22. (Amended) The apparatus of claim 9, further comprising a position detector coupled to the elongated member, the position detector configured to detect a relative insertion position of the elongated member.

23. (Amended) The apparatus of claim 9, wherein the distal portion comprises at least one of a blade, a serrated edge, a biopsy tool, a trocar tip, an ultrasonic tool, a needle, a vibrating tip, a suturing tool, a retractor, an electrosurgical cutter, an electrosurgical coagulator, a forceps, a needle holder, scissors, an irrigator, an aspirator, a medicator, a laser tool, a cryogenic tool, a flexible steering or guiding tip, and a camera.

24. (Amended) The apparatus of claim 9, the sensor being a first sensor, the actuator being a first actuator, the apparatus further comprising:

a second sensor configured to detect a rotational force being applied to the elongated member; and

a second actuator configured to apply a rotational force to the elongated member.

25. (Amended) The apparatus of claim 11, wherein the second force is a rotational force.

31. (Amended) A method of inserting an instrument into an insertion site, the method comprising:

inserting the instrument into an orifice;

detecting a first force applied to at least a portion of the instrument, the first force being associated with an insertion direction; and

applying a second force to the instrument from within the orifice.

32. (Amended) The method of claim 31, further comprising sensing the first force.

33. (Amended) The method of claim 32, wherein the second force is related to the first force.

34. (Amended) The method of claim 31, wherein the second force is in the insertion direction.

35. (Amended) The method of claim 31, wherein the second force is in a direction opposite the insertion direction.

36. (Amended) The method of claim 31, wherein the second force is applied by an electromechanical actuator.

37. (Amended) The method of claim 31, further comprising:

detecting a position of the instrument in a working channel extending from the orifice, the instrument being sensed in the working channel using a sensor device, the second force being applied to at least a portion of the instrument using an actuator to move the instrument through the working channel, the instrument being moved to a position so that a leading end of the instrument is located at a predetermined distance relative to an end of the working channel.

Please add the following new claim:

--38. (New) The apparatus of claim 1, wherein said sensor is further configured to detect a movement of the elongated member in the degree of freedom and output a movement signal based on the movement, the force being applied as a haptic feedback based on the movement signal.--

REMARKS

Entry and consideration of the foregoing amendments is respectfully requested.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.